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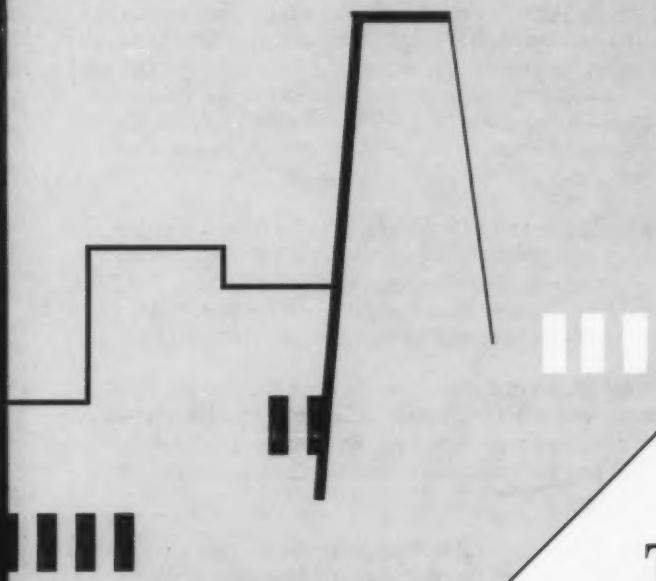

Treating the Economic Ills of Rural Areas

Pawpaws: Fruit of the Future?
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PERSPECTIVES

PLANTED ACREAGE of grains and soybeans in the United States this year should be up nearly 8% from last year, according to USDA's annual planting intentions survey, conducted in March. The expected increase of nearly 18 million acres would bring the total for grains and soybeans to nearly 247 million acres.

These plans could easily change, of course. Economists point out that the weather and various economic factors often result in farmers being unable or unwilling to follow through on their March intentions. The increased acreage totals that farmers are planning on this year reflect the higher prices and lower stocks of several major commodities. These conditions are primarily the result of the 1988 drought. Farmers also are being required to leave fewer acres idle under government programs for a number of crops this year.

Wheat acreage is expected to be up 13.4% this year to 74.3 million acres. (For winter wheat, the figures are an estimate of acres seeded last fall.) Spring wheat acreage apparently will increase by a larger percentage than winter wheat. The 1989 corn acreage was put at 73.3 million, an increase of 8.3% over last year. Soybean growers indicated they would boost their acreage by nearly 5%, to 61.7 million.

Oats, barley, and rice are all expected to total lower acreage this year, but grain sorghum is likely to be up more than 14%. Among other things, the oats and barley planting intentions may reflect better opportunities with other crops, Economic Research Service analysts say. In the rice sector, stocks went up last year as prices went down.

World cotton supplies have increased and the U.S. government set-aside level was doubled to 25% for upland cotton, with the result that farmers indicated they planned to reduce all cotton acres this year by 11.6%. Tobacco acreage is likely to be up nearly 13%, and planting of dry edible beans up 11.4%, while sugar beet acres are expected to remain about the same. Peanut and sunflower acreages are expected to fall.

Farmers' Planting Intentions for 1989

	1988 planted acreage	1989 planting intentions/1	Change from 1988 to 1989
	thousands of acres		
Grains & soybeans			
Corn	67,619	73,253	+8.3%
Sorghum	10,358	11,829	+14.2%
Oats	13,927	13,217	-5.1%
Barley	9,676	9,620	-0.6%
All wheat	65,529	74,285	+13.4%
Winter	48,800	54,731/2	+12.2%
Durum	3,336	3,855	+15.6%
Other spring	13,393	15,699	+17.2%
Rice	2,928	2,861	-2.3%
Soybeans	58,870	61,720	+4.8%
Total	228,907	246,785	+7.8%
Other crops			
All cotton	12,497	11,045	-11.6%
Upland	12,310	10,754	-12.6%
American Pima	187	291	+55.3%
Hay/3	65,559	63,061	-3.8%
Peanuts	1,648	1,638	-0.6%
Sunflowers	2,138	2,074	-3.0%
Tobacco/3	632	713	+12.9%
Dry edible beans	1,498	1,670	+11.4%
Sugar beets	1,327	1,326	0

1/Based on voluntary responses collected from a sample of U.S. farmers and ranchers during the first half of March. 2/Estimated plantings, fall 1988. 3/Area harvested.

FARMLINE

AGRICULTURE...NATURAL RESOURCES...RURAL DEVELOPMENT
Practical economic intelligence from USDA's Economic Research Service

FEATURES

Treating the Economic Ills of Rural Areas *by Doug Martinez* 4

The European Community and the United States are both seeking ways to maintain the economic vitality of their rural communities. But the methods used, and the major reasons cited for making the effort, are not the same on both sides of the Atlantic.

Marketing Loan Protects Rice Market—But Not Completely *by Judith Foulke* 8

The marketing loan program initiated in the 1985 farm bill is said to have revitalized the U.S. rice industry. But unusual world market conditions during the last 2 years sent U.S. prices up and exports down. With the market now recovering, analysts take a look at prospects for the future.

Government Payments Account for 9.2% of Farm Income *by Jack Harrison* 12

Direct government payments to the U.S. farm sector in 1987 totaled $16.7 billion, a record high. The payments were 9.2 percent of the gross cash income of all farms. Data from USDA's annual Farm Costs and Returns Survey are analyzed by ERS economists.

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Treating the Economic Ills Of Rural Areas

Faced with the continuing migration of people from the countryside to the cities, both the United States and the European Community (EC) are seeking ways to maintain the economic vitality of their rural communities.

It is called the search for an effective government policy—but it is actually an effort to get a grasp on, and some control over, the factors and forces that are sometimes beyond any ability of government to influence.

Chief among them is the weakening competitiveness of rural areas when compared to urban areas, or producers in other countries, in providing resources or products.

"Unfortunately, rural areas in the United States and Western Europe have lost some of their most important economic mainstays," say economist Ken Deavers and political scientist Dick Long of USDA's Economic Research Service. "Without them, rural areas are the victims of inherent economic disadvantages compared with cities or metropolitan areas."

The reasons for trying to solve these problems, however, are different in the United States and the EC—and show the wide differences between ways of looking at rural areas and the people who live in them.

Sharing History

What the two geographic entities share is a series of events and effects that have touched (and in some cases transformed) rural areas: continued contraction of employment in farming; a change to dependence on other sectors, first to manufacturing and later to services; overall economic diversity that masks many narrowly based local economies; a general rural revival in the 1970's, with attendant rapid rural job and population growth; and a return in the 1980's to the pattern of comparative rural stagnation typical of the 1950's and 1960's.

"In spite of agriculture's shrinking share of employment and a corresponding decrease in its share of gross domestic product," says Deavers, "agricultural policy is as difficult to disentangle from rural development policy in Europe as it is in the United States. Agricultural and rural well-being are as closely identified in the popular mind and political processes of Europe as they are in the United States."

Rural areas in the United States and Western Europe have lost some of their most important economic mainstays.

That is one major reason why income transfers to farmers in the United States and Western Europe (in the form of price supports and other subsidies) are considered so critical.

"Governments continue to spend so much on farm programs (as rural policy) because they are uncertain about other intervention strategies to hold population in rural territories," says Deavers. "However, in spite of their popular appeal, farm programs do little to accomplish that goal."

In rural Europe, he says, rapid structural change proceeds while the citizens pay for record subsidies at the supermarket and with their taxes.

"Americans might recognize the similarity to our own situation," says Deavers. "Here, despite record-high government payments to farmers and record-high farm income in the middle 1980's, farm-dependent rural communities continue to lose population to metropolitan areas at or near record rates."

The EC's farm spending—under its Common Agricultural Policy—now absorbs more than 60 percent of the entire EC budget.

"That share is grossly disproportionate to the dozen other important activities being undertaken by a rapidly growing EC, let alone activities to assist rural areas," says Deavers. "Recent reforms in the computation of country shares of the EC budget have been driven by the need to have enough funds available to cover possible share increases in the cost of the CAP. This is a source of growing resistance on the part of Britain and other less agriculturally dependent EC countries."

EC Concerns Different

The reasons behind the spending by the EC, though, range far afield from those of the United States.

Although both entities want farmers and other rural residents to enjoy a standard of living that allows them to remain in the countryside, policymakers in the EC and the United States differ about the ultimate motivations.

Deavers couches his explanation in terms of "territorial imperative," the commitment to a form of economic development that allows people to continue to live in the countryside if they wish, without sacrificing a standard of living that at least approaches the national average.

"The territorial imperative takes forms in Europe that are unfamiliar to Americans," says Deavers. "Europeans are concerned with the ecological consequences of depopulation, what they call 'desertification.' Europe has been more densely settled than the United States for over a thousand years, and in this European view, much of the territory must be maintained by man in order to protect the ecology, the natural and social environments, and the beauty of the countryside."

Moreover, he says, "territorial concerns manifest themselves in some European countries, especially in the less populated north, as important to national defense—the need to have people in remote areas to assure that a potential enemy does not encroach unobserved on the borders. There is a similar concern about occupying space with ethnic nationals in countries with a large localized ethnic minority or refugee population. Furthermore, there is a strong interest in maintaining ancient ties to the historical and cultural identity that many nations feel with their rural roots."

The U.S. concern for territorial imperative is less tied to the maintenance of the countryside and more to the economic viability of rural communities, and the plight of those who must move to make a living.

"Residents and merchants see their way of life and livelihoods threatened," says Deavers. "Parents are distressed by the prospect of separation from their children and grandchildren, and elected officials see their constituencies and electoral bases eroding."

Former Senator Lawton Chiles of Florida, speaking last year at a hearing on rural development legislation, phrased it this way: "USDA tells us that 632,000 people moved from rural to metropolitan areas in 1985. Nearly half of all rural counties lost population during 1983–85—compared with 20 percent that lost population in the 1970's. As the result, rural America is aging . . . These trends scare me. They tell me that the future of rural America is also dying. If we cannot keep the young people interested in staying in their communities—with their vigor, enthusiasm, and energy—these communities will disappear. And the social consequences for those left behind will be even more profound."

Indeed, says Deavers, "the political rhetoric deploring rural outmigration is the best evidence we have of a territorial imperative. But legislation creating rural development programs has rarely corresponded to the rhetoric. There are no programs specifically helping only places experiencing outmigration."

For example, he says, "the law that created the Economic Development Administration did not specifically direct its assistance at such areas. Nor did the laws creating any of the Farmers Home Administration rural development programs. Our basic agricultural policies have supported the mechanization and consolidation of farming, facilitating the rapid loss of farm population and the decline of many farming communities."

Declining Farm Population

Between 1950 and 1985, Deavers says, the U.S. farm population declined by an estimated 17.7 million people.

"Nevertheless," he says, "until the emergence of serious urban stresses in the 1960's, especially the riots of that decade, there was surprisingly little talk about outmigration or rural depopulation as a major problem."

In fact, he says, there is another perspective in the United States that is different from the EC view.

"We are a nation of immigrants whose ancestors came from every continent," Deavers notes. "Why should we be so troubled if the grandchildren of Swedish peasants who traveled thousands of miles to make new homes in South Dakota now have to travel a few hundred miles to make a new home in Minneapolis? If we are committed to the results of market efficiency in so many other respects, why not in location decisions? Though rarely articulated, if we consider the results, this philosophy has prevailed."

European leaders have matched the rhetoric—and added new programs as well that emphasize the goal of keeping the rural population in place.

"The comparison with Europe is striking," says Long. "If anything, western European leaders and governments are even more articulate about the territorial imperative. European political leaders seem as aware of rural problems as American leaders and they express similar concern for the plight of economically disadvantaged rural people and communities losing population."

The Council of Europe, made up of 21 countries, recently conducted a "Campaign for the Countryside." The project was aimed at many problems, but began with "disadvantaged rural areas threatened by depopulation, economic decline, and a diminishing quality of life." Similarly, many countries in the Rural Public Management Project of the Organization for Economic Cooperation and Development have expressed such concerns.

"The subject also comes to the fore in electoral politics in Europe," says Deavers. "Raymond Barre, the moderate Gaullist candidate for President of France in last year's election, for instance, promised a policy of planning for the development of France's rural territory as part of the first item in his election manifesto. The ultimately victorious socialist coalition made similar promises."

Such political statements signify something else as well, says Long.

"Another reason for agriculture's continuing place in rural development strategies in most of Europe is its comparatively great political muscle," he explains. "Many European countries practice a version of syndicalism. Under this arrangement, organizations of tradesmen, producers, and craftsmen are given quasi-official status."

(continued on next page)

In the case of agriculture, he says, one farmers' organization in France, for example, is designated by the party in power as the official representative and spokesman for farmers.

"That organization speaks for rural people as well as farmers and is officially consulted as national legislation concerning farmers or rural areas is considered," he adds. "Major farm and commodity groups in other countries and at Brussels, the headquarters of the EC, exercise influence similar to that exerted by commodity associations in American politics."

European nations also differ from the United States in using more direct governmental involvement to aid the rural economy.

Europe's Direct Approach

"Because state-run enterprises have been a more important part of virtually all the European economies," Deavers says, "governments have had somewhat greater latitude and willingness to direct investments into depressed regions and rural communities."

Certainly, he says, "it is possible to overstate the impact this approach has had, and some such projects have proved expensive and ultimately unsuccessful. But its use is a significant difference between Europe and the United States. Carried further, it has also led to governments joining with private investors, taking an ownership stake in the rural enterprises."

Deavers points out that "these cooperative efforts are a literal application of 'public-private partnerships' for rural development, a term often used in the United States, but with a meaning that is less clear. Except for some limited, new state programs, there are few other examples of similar approaches in this country."

That is not to say that the U.S. government has taken a hands-off approach to rural America.

"The federal government has from time to time embarked on expensive programs to address serious regional or territorial disparities in income and standard of living," says Deavers. "The Tennessee Valley Authority (TVA) was created to aid in the economic development of an area with limited resources, that frequently had been ravaged by floods and that contained a very poor population."

In other ways, too, help has been given to those living outside urban America.

"The electrification of rural America was undertaken with massive subsidies from the taxpayers," says Deavers. "And rural telephone systems were created with similar subsidies provided by taxpayers and/or users of other telephone systems. The principal justification for these programs was that rural (and at the time mostly farm) people should enjoy the fruits of our society's advancing technology, even if investments were not feasible for private utilities, and whether or not they were cost-effective in a market sense."

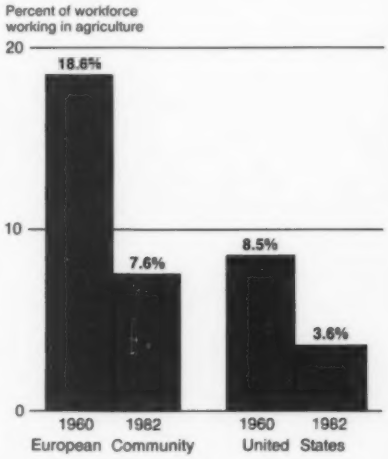
In a similar manner, the major rural development programs of the 1960's—those operated by the Economic Development Administration and the Appalachian Regional Commission—were aimed at stimulating economic development to overcome rural poverty.

But these days, Deavers says, "the broad political consensus needed to mount a major federal rural development program has apparently disappeared." Among the reasons, he and Long suggest, are the following: income growth has slowed and with it availability of funds for such programs; there are now many more, well-organized competitors for assistance; the importance of farm poverty in rural areas has declined and with it the power of farm plight to marshal support for general rural spending; indicators suggest that some of the worst rural distress has lessened; and the decade of remarkable rural growth in the 1970's led people to view rural decline as largely a thing of the past.

To some extent, the commitment to regional or territorial development programs has diminished in Europe as well.

"But support for two territorially significant kinds of programs continues there," they say. "Probably most important is Europe's more extensive social welfare system. There, social welfare benefits reduce regional disparities in income and living conditions by providing a uniformly higher minimum income and standard of living, at least in the wealthier countries."

The European Community Leads the United States in Percentage of the Workforce Working in Agriculture, but Both Have Shown Steady Declines



Individual Countries in Western Europe Have Widely Varying Percentages of the Workforce Working in Agriculture*

	1960	1982
	Percent of civilian workforce	
Greece	57.1	28.9
Portugal	43.9	28.9
Finland	42.4	25.9
Spain	38.7	18.3
Ireland	37.3	17.3
Italy	32.6	12.4
France	23.2	8.3
Austria	22.6	8.7
Norway	21.2	8.0
Denmark	18.2	7.5
Luxembourg	16.6	4.7
Sweden	15.7	5.6
Switzerland	14.6	7.1
Germany	14.0	5.5
Netherlands	9.8	5.0
Belgium	8.7	3.0
United Kingdom	4.7	2.7

*Data from the Organization for Economic Cooperation and Development (OECD).

They go on to say that "the reasons Europeans are willing to support greater social equalizations are deep in history and political culture. Most European countries are more ethnically homogenous. And their political parties are stronger and more ideologically motivated than American parties. Their politicians are less open in courting purely local interests. Rather, there is a fairly strong consensus for continuing inter-regional transfers to disadvantaged provinces or areas, referred to as 'the solidarity principle.'"

EC's Sacrifices

The same principle is applied, somewhat more modestly, at the level of the EC itself. In admitting Spain, Portugal, and Greece to the EC, member countries consciously undertook economic sacrifices to support poorer, less developed economies. And a small part of the EC's budget for many years has been set aside to address regional differences by aiding what are called the "Least Favored Areas" (LFA's). There are such areas, mostly rural, in virtually all of the countries in the EC, but there are more and larger ones in rural parts of the poorer countries. Aid to the LFA's is contingent, however, on the preparation of comprehensive development plans.

Plans for greater European economic unification in 1992 include more assistance to the LFA's. Jacques Delors, the European Commissioner, has submitted proposals designed to deal with new imbalances which are expected to result from the Single European Act. His proposals include an examination of new structural and social policies to strengthen weaker regions. The EC structural fund for disadvantaged areas and declining industrial regions was recently doubled.

The EC is also beginning to broaden its view of rural areas as being more than farming areas. It has commissioned a study that will look at farm households affected by the shrinkage of the farm sector. The study will measure the impacts of change, the availability of alternative employment, and how farm families respond to economic stress. A special focus will be on multiple and off-farm job-holding and new sources for family income.

"Provisions to encourage what is called 'pluriactivity' (multiple job-holding among farm household members) are seen as a legitimate rural development strategy, even in those countries where farm fundamentalism remains strong," says Long.

These efforts signal the fact that "agricultural policies narrowly focused on production subsidies will do little to slow the adjustments in agriculture which contribute to rural-to-urban migration," he says. "Furthermore, the 'post-agricultural' diversity of rural economies means that no sector-specific policies can cope with the breadth of adjustments facing American and European rural areas. Dealing with these adjustments requires a broad-based, comprehensive approach to dealing with rural disadvantages."

The Percentage of People Living in Cities With More Than 50,000 Residents Varies Widely Among the United States and Western Europe.

Nation	Population in cities of over 50,000
	Percent
United Kingdom	69.8
United States	61.4
Spain	53.7
Germany	52.8
Switzerland	50.9
France	50.7
Greece	49.4
Netherlands	44.3
Denmark	37.9
Italy	37.7
Ireland	33.4
Sweden	32.9
Austria	32.7
Belgium	30.0
Norway	29.6
Finland	27.3
Luxembourg	21.8
Portugal	15.9

Figures are from the Organization for Economic Cooperation and Development (OECD).

Also required is an approach that may sometimes override the application of national "market efficiency" tests of feasibility. "Given the relatively slow growth in per capita income in the United States and abroad since the early 1970's, it probably will be difficult to achieve a political consensus on such a policy."

Even so, says Deavers, "there remains in Europe a greater willingness for governments to intervene more directly for the specifically social goal of keeping rural territories populated. And the European commitment to a more equal income distribution, especially at the bottom, means that fewer of the rural people who are left behind will be poor and as comparatively underserved as in the United States."

Ultimately, he says, "this will reduce at least some of the economic gains to rural residents to be achieved through migration to the cities, thereby reducing the rate and the size of the adjustments required by European nations." □

[Based largely on information provided by political scientist Richard Long and economist Ken Deavers of the Agriculture and Rural Economy Division, Economic Research Service.]

Marketing Loan Protects Rice Market—But Not Completely

The price-sensitive rice export market is stabilizing after an unusual year in 1987/88 that sent U.S. export prices to $540 a ton—$230 higher than the prices of our closest competitor, Thailand.

The high prices caused U.S. exports to drop to 72.2 million cwt, 12 million below the previous year, and resulted in the United States losing market share among major customers.

This was the first time since the establishment of the marketing loan in the 1985 farm bill that U.S. rice export prices had reached such a high level. But 1987/88 (the marketing year for rice harvested in the fall of 1987) was an unusual year for the rice industry worldwide.

In 1987 there was a drought in India, a major importer, and a poor monsoon season in Thailand, a major exporter. Many analysts thought that this would create a strong export demand for U.S. rice, says economist Sara Schwartz of USDA's Economic Research Service.

Prior to the drought in Asia, CCC surplus stocks of rice were depleted and privately held stocks were very low. (The competitive sales advantage created by the marketing loan program had enabled stocks to be drawn down during the previous marketing year.) The expectation of increased export demand, competing domestic demand, and our own depleted stocks escalated U.S. prices, says Schwartz.

But conditions in the market changed early in 1988. Because U.S. prices were so high, the European Community, Iraq, and other traditional U.S. customers delayed rice purchases from U.S. sources or bought rice from Thailand and Uruguay at lower prices. In addition, Thailand's second planting was larger than its normal dry season crop and this increased its export potential by mid-1988.

Schwartz says that lack of demand for U.S. rice caused farm prices to fall steadily starting last July. By December, Houston FOB prices were down to $330 per ton (for No. 2, 4 percent broken long grain). This was $70 above the Thai nominal price quotes for 100 percent B long grain.

Economists credit the marketing loan for revitalizing the rice industry.

ERS economist Janet Livezey says that for the first quarter of this marketing year, which started last August, U.S. export activity was sluggish. With the CCC inventory depleted and few marketing loans being redeemed by producers, little rice was available for export at competitive prices.

Because U.S. exports got off to such a slow start, says Livezey, it is likely that U.S. stocks will be building up again.

Early this year, rice prices were not competitive in commercial export markets because stocks were low and domestic use levels were high. Expectations that U.S. rice prices will begin to escalate as they did last year are encouraging producers to play a "waiting game" with their marketing loans this year, says Livezey. "They will be looking for the right opportunity to repay their loans at a low level and then hopefully sell their rice at a higher level."

Livezey says it is possible that "if export activity does not pick up in the remainder of the marketing year, some producers may forfeit their crops rather than redeem their marketing loans." As of February 1989, only 40 percent of the marketing loans had been redeemed, compared with 83 percent in February 1988.

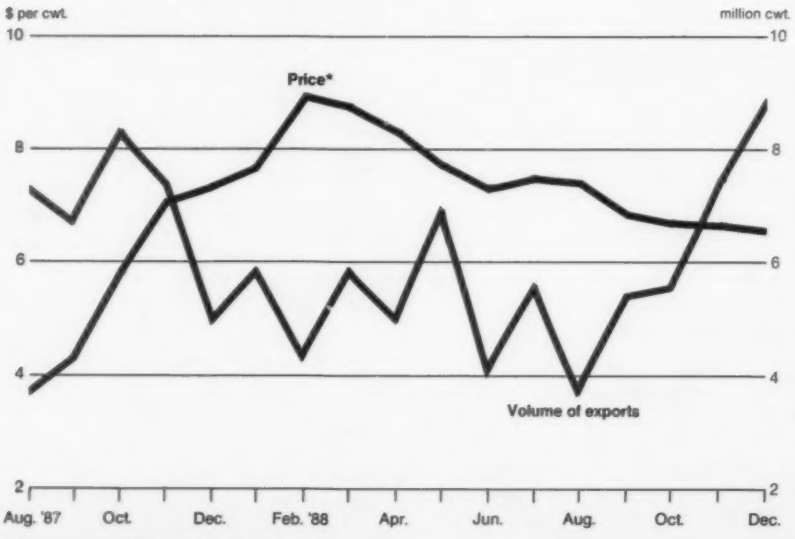
"It is apparent that the marketing loan is more effective in keeping U.S. prices competitive when stocks are high," says Livezey.

"Since the beginning of the marketing loan, only between 2 and 3 million cwt of rice has been forfeited. Almost all rice put under loan in 1986/87 and 1987/88 was eventually redeemed."

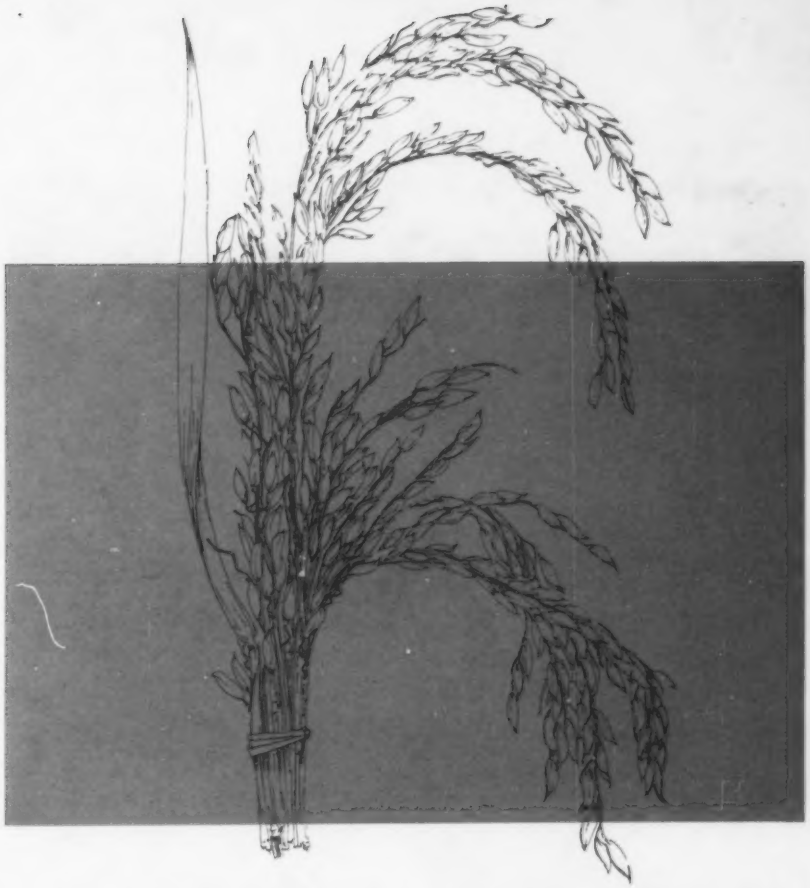
The Marketing Loan and U.S. Prices

Economists credit the marketing loan with revitalizing the U.S. rice industry, which was flat at the time. In the early 1980's,

U.S. Rice Exports Began Recovering in Late 1988



*Average monthly price received by farmers.



high producer loan rates, combined with the appreciated dollar, made U.S. farm products, particularly rice, higher priced than those of competitor nations. Even though U.S. rice prices were relatively low compared with previous years, they were still almost twice as high as prices charged by other rice-exporting countries.

The federal commodity loan program kept U.S. prices propped up at the loan level, say ERS economists, preventing any adjustments to meet world competition. The high prices caused the export market to stagnate, and since domestic sales used up only about half of the rice produced, stocks started to build.

The marketing loan for rice represented a new concept in commodity programs. The idea was to bring down high prices to make rice competitive in the world markets and more attractive to food processors in the domestic market.

The loan works like this:

After the rice is harvested, producers who participate in acreage reduction programs may place their rice under loan. They receive cash in the amount of the loan rate announced by USDA for rice that marketing year. Long grain rates are higher than the average and medium grain rates are lower. This year the average loan rate is $6.63 per cwt. In 1987/88 it was $6.84 and in 1986/87 it was $7.20.

Farmers then have up to 9 months to redeem their rice or forfeit it to the Commodity Credit Corporation.

The redemption price is announced weekly. It is calculated by the USDA to fall in line with the world price.

The maximum the redemption rate can be set is the loan rate. The minimum, to be set in 1990/91-1991/92, is 70 percent of the loan rate. The minimum rates were established in the 1985 farm bill. In 1988/89 it was 60 percent, and in 1987/88 and 1986/87 it was 50 percent.

The reduced redemption rate allows farmers to receive the total loan value. For instance, a farmer places his rice crop under loan at $6.63 per cwt. If the world price is calculated at $4.50 per cwt at the time of redemption, the farmer repays his loan at $4.50 per cwt and keeps the difference between $6.63 and $4.50.

If he sells his crop for the world price of $4.50, he has received the total loan value ($4.50 from the market and $2.13 from the government). If he can sell his rice for more than $4.50 per cwt he will earn more than the loan rate.

The difference between the redemption rate and the price received by the farmer from the market is referred to as a premium. Part or all of this premium compensates the farmer for costs involved in storing his crop and redeeming his loan.

Under the marketing loan arrangement, the farmer is guaranteed a price equal to the loan rate or above. Rice millers can buy the rice from the farmer at a rate closer to the world price. This helps to keep U.S. rice competitive on world markets. However, if the premium goes higher than buyers are willing to pay, the market slows.

The marketing loan made rice competitive almost immediately in 1986/87, the first year it was used. Rice prices came down and trade on the international and domestic markets resumed at a faster pace.

Higher demand significantly reduced stocks that had been building. By the 1987/88 crop year, the CCC stocks were depleted.

Consumers Rediscover Rice

Lower prices for rice, encouraged by the marketing loan, gave a boost to domestic use. The lower prices, coupled with a perception that complex carbohydrates found in grain products have health benefits, made rice a more popular menu item. Increased acceptance by consumers encouraged expansion of rice products in the domestic industry.

Even though prices are higher now, rice is still gaining popularity. Livezey says that domestic use this year is projected to rise by 4.4 percent to 75 million cwt. "Rice cakes are selling like hot cakes," she says. And other rice products are doing almost as well. Aggressive marketing by rice companies has introduced many new, easy-to-prepare products, and consumers have

shown enthusiasm for them. One rice company alone has introduced over 30 new products.

Large users, such as restaurants, food service institutions, and firms marketing frozen food entrees, cereals, and snack foods, have benefited from lower prices over the past 3 years. A recent study of food service operators found that 43 percent are serving rice more frequently.

Another study shows a 7.6-percent gain in the use of rice for the total commercial food-service menus. Preliminary results of a USDA milled rice distribution survey confirm that domestic rice shipments continue to increase.

Livezey says that the marketing loan has been popular in all sectors of the rice industry. The lower market prices precipitated by the program have virtually eliminated rice production by nonparticipating farmers.

The rice industry and rice consumers benefit from many government programs. They include commodity loans, deficiency payments, marketing loans, marketing certificates, and acreage reduction. Export programs for rice include P.L. 480 for food aid, the Export Credit Guarantee Program which guarantees repayment of private credit extended to foreign importers, the Export Enhancement Program which helps meet competition from subsidized foreign exporters, and the Targeted Export Assistance Program which helps promote U.S. rice in foreign countries.

Livezey says that the government programs, in addition to keeping rice prices competitive, raise farmers' incomes. They also tend to lower farmers' costs of production, and increase the value of their land.

U.S. consumers benefit from lower prices, but the government programs are costly. ERS economists estimate that, currently, $1 billion annually of government money is invested in commodity programs for rice alone.

Should the marketing loan be continued in the 1990 farm bill? Economists have mixed opinions, but ERS economist Joe Glauber points out that a gradual reduction in rice loan rates would ultimately have the same effect as a marketing loan. The 1985 farm bill sets the minimum rice loan rate at $6.50 per cwt.

What about the other government programs for rice? Livezey feels that irrigation will be considered as one of the issues when farm programs' renewal for rice is studied. Rice fields must be flooded. The water provides the moisture that rice needs, but it also controls weeds and pests. New high-yield varieties currently being used are more susceptible to disease, possibly requiring greater use of fungicides. And the high yield feature of the new varieties requires more fertilizer. All this could lead to contamination problems in the runoff water.

Water supplies also need to be reevaluated with new farm legislation. Water in some of the rice-growing areas is in critical supply, says Livezey. Many of the areas compete with urban areas for the water. The heavy irrigation needed for rice crops could cause a critical drawdown of underground water supplies.

Rice is a small industry in the United States. The number of rice producers is small relative to the total number of farmers, but they have a strong voice through their co-ops, says Livezey. And because rice is not marketed as a bulk commodity, the rice millers are an important part of the industry. The millers have a strong coalition which encourages much of the legislation that favors rice. □

[Based on information provided by economists Janet Livezey, Joe Glauber, and Sara Schwartz of the Commodity Economics Division, and Lois Caplan and Kelley White of the Agriculture and Trade Analysis Division, Economic Research Service.]

U.S. Producers Still Waiting To Sell Rice to Japanese

In September 1988, the U.S. Rice Millers' Association (RMA) filed an unfair trade practices complaint with the United States Trade Representative (USTR) against Japan's almost complete ban on rice imports.

This is the second time the RMA has petitioned the USTR to take action against Japan's firm stand on rice imports.

The USTR rejected the petition, suggesting that the complaint be discussed in the GATT trade negotiations instead. Japan says it will not discuss the issue with the United States bilaterally, but agreed to multilateral discussions through GATT.

Only about half of the rice produced in the United States is used domestically. The rest is exported. If Japan would allow rice imports, the United States could gain access to a market of 10 million tons per year. Gaining just 1 percent of that market (100,000 tons) would be a big boost for the U.S. industry; estimates of what market share the U.S. might eventually gain vary widely.

An opening of the Japanese market would likely drive up world prices of Japonica rice, leading to further income gains for California rice farmers. In this country, the Japonica variety of rice, which Japanese consumers prefer, is grown mostly in California.

But the Japanese government is resisting any change in its ban on rice imports.

Right now, the only foreign rice Japan allows in under its tight food control system is small quantities for use in alcohol or other processed rice products. Consumers subsidize prices for Japanese-produced rice that are currently 6 times the world level.

Rice is the major crop of Japan. Opening the rice market is a sensitive issue because rice represents food security and is important in many traditions.

But dealing with rice surpluses strains the Japanese budget, and consumers pay an enormous subsidy to rice farmers. (The government sets retail prices at high levels and controls retail-farm margins. Direct tax subsidy to producers of rice is small.)

Also, the extra production encouraged by the high, government-set producer prices adds to Japan's already large stocks of rice. So in 1987, for the first time since World War II, producer rice prices were cut by almost 6 percent, and in 1988 they were dropped another 4.6 percent.

ERS economist Lois Caplan says that one agricultural reform goal in Japan is to consolidate farms, making them larger and more efficient. The feeling is that coaxing out the rice farmers whose operations are on marginal financial standing should make the Japanese industry more efficient. The government also has a program to pay producers to divert farmland from rice to wheat, forages, vegetables, and soybeans.

So what is the logic that would allow exporters to enter this tight market?

Imports would lower producer rice prices in Japan. Over the long term, lower profits could deter marginal farms from continuing to produce rice. The total effect for the Japanese government would be similar to the current policy of lowering rice support prices.

The problem is that rice producers in Japan won't like the arrangement much. Full-time rice farmers would be the hardest hit, financially. Without the government assistance they're used to, some might have to give up their land.

On the average, full-time farmers in Japan are poorer than part-time farmers. Much of the rice produced in Japan is from small farms operated by part-time farmers who derive more than 80 percent of their household income from off-farm employment. This part-time phenomenon may act as a cushion and reduce, at least in the short to intermediate term, the urgency for adjustment, should prices fall.

Recent concessions already made by the Japanese government on the GATT-12 case, beef and citrus, and other issues, may lessen U.S. leverage in achieving any near-term concessions on rice. ERS economist Kelley White says that the Japanese may have reasoned earlier that they needed to do something dramatic (which they did) on beef in order to buy time on rice.

Farm groups in Japan are politically powerful. In the fall of 1988, both houses of the Japanese parliament passed resolutions opposing rice imports, and a letter was sent to former President Reagan from Prime Minister Takeshita urging the Reagan administration to turn down the RMA petition. Moreover, the Central Union of Agricultural Cooperatives, known as Zenchu, reportedly threatened to boycott other U.S. farm products if the United States pressed Japan on rice.

White says that the Japanese acknowledge that the rice import ban is an area of policy that eventually has to be reformed, although they don't seem ready to do so right now.

Government Payments Account for 9.2% Of Farm Income

Direct government payments to the U.S. farm sector in calendar 1987 totaled $16.7 billion. This was a record high for the 55 years that such payments have been made. For all farms, the payments were 9.2 percent of gross cash income.

For grain farmers, the payments accounted for more than 23 percent of gross cash income, according to a recent analysis of the distribution of the payments.

Economist Andy Bernat of USDA's Economic Research Service says that in 1986 and 1987 low commodity prices relative to target prices were the main reason for the high level of government payments. (Deficiency payments, the major portion of direct government payments, are based on target prices and loan rates, and go to farmers who participate in government commodity programs.)

Commodity Credit Corporation (CCC) loans are not classified as direct government payments in USDA's statistical system. Instead, they are counted as a cash receipt in the year the loan is received, Bernat says. (Net CCC loans—new loans minus existing loans repaid—totaled only about $170 million in 1987, but had been more than $8 billion in 1986.)

Direct government payments include deficiency payments, land diversion payments (including those for the Conservation Reserve Program—CRP), and payments under special programs, such as the Dairy Termination Program, Bernat says. The majority of payments go to farms producing corn, wheat, soybeans, sorghum, rice, cotton, barley, and oats.

The data on the distribution of government payments among farm operators are from USDA's 1987 Farm Costs and Returns Survey. Taken in early 1988, the survey provides in-depth financial information on a sample representing 1.7 million farms. For farms with sales of $10,000 or more, the survey accounts for nearly 95 percent of the USDA's official estimate of 1.01 million such farms.

Direct government payments accounted for more than 23 percent of the gross cash income of grain farmers in 1987.

Cotton Payments Among Highest

Cotton farms had the highest average payment ($38,300) per reporting farm and the second highest payments as a percent of gross cash income (19.8 percent). Cash grain farms had the second highest level of payments per reporting farm ($22,200). Payments per reporting farm and as a percent of gross cash income were much lower for farms specializing in other commodities.

Payments as a percent of gross cash income for beef, hog, and sheep operations were 5.9 percent, for dairy farms they were 3.7 percent, for all other crops 3.5 percent, and all other livestock 1.0 percent.

Direct government payments to the farm sector for calendar 1988 have been estimated at $14 billion, a decrease of 16 percent from 1987. A further decline, to perhaps $12.6 billion, is expected this year, mainly because of the 1988 drought. Since commodity prices rose when the drought reduced production, deficiency payments decreased.

The drought's full effect on government payments is delayed because of the system of periodic disbursement of deficiency payments to farmers, says Bernat. Deficiency payments are distributed at three different times, with the final one being at the end of the marketing year. The first payment to corn producers that would show a significant effect from the drought was the March 1989 payment, Bernat says.

Another factor in government payments for 1988 and 1989 is the drought aid legislation passed last August. It provided about $4 billion in assistance for farmers hit hardest by the drought.

The 4 years beginning with 1986 apparently will be the four largest ever for direct government payments, with totals (some estimated) of $11.8 billion, $16.7 billion, $14.0 billion, and $12.6 billion, respectively. Prior to 1986, payments exceeded 7 percent of gross cash income only in 1939, 1940, 1968, and 1969.

Government payments of less than 1 percent of gross cash income were recorded in 1980, three times in the mid-1970's, and for eight straight years from 1948 through 1955. But direct payments were not the main source of assistance in earlier decades.

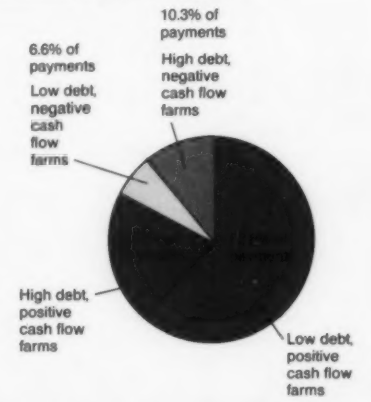
The first direct payments to farmers were made in 1933, amounting to $131 million or 2.4 percent of gross cash income.

Where the Payments Go

The ERS economists, in analyzing the data from the costs and returns survey, have looked at what portion of the government payments went to farmers in financial difficulty.

Nearly 40% of Direct Government Payments Went to Farms With High Debts, Negative Cash Flows, or Both

Distribution of government payments:*


10.3% of payments
6.6% of payments
High debt, negative cash flow farms
Low debt, negative cash flow farms
High debt, positive cash flow farms
Low debt, positive cash flow farms

*Data from *1987 Farm Costs and Returns Survey* covering 1.7 million farms and $16.7 billion in direct government payments.

"Nearly 40 percent of total payments received by operators in 1987 went to farmers with high debt loads, negative cash flows, or both," says Dave Banker, another ERS economist. He adds that some farmers suffering financial stress are producing commodities that are not eligible for government programs.

The commodity programs were not designed to assist only farmers with financial problems, Banker says. "We can't expect that payments will go to only those farmers in greatest financial need and bypass those who may be able to earn a profit without them. Because many current program payments are based on the potential production of eligible commodities, it is not surprising that payments are roughly proportional to the sales of these commodities."

In 1987, for example, nearly 80 percent of direct payments went to farms in the economic class (sales plus government payments) of $40,000 to $499,999. Farms in this group also had about 77 percent of the sales of major program commodities. These farms comprised about 31 percent of all farms and about 60 percent of the farms reporting payments.

Farms in the economic class of $500,000 and above received about 10 percent of total payments and had the highest average payment per reporting farm ($68,705). They were responsible for about 15 percent of total sales of major program commodities and comprised 2.7 percent of all farms receiving payments.

Nearly 44 percent of all farms were in the economic class of less than $10,000, but they received only 1.6 percent of total government payments and accounted for just 1 percent of major program commodity sales.

Farms in the class of $10,000 to $39,999 had 7.0 percent of government program commodity sales and received 8.9 percent of total government payments.

In classification by production specialty, cash grain farms led in sales of major program eligible commodities and in government payments. They received about 60 percent of total payments, had nearly 70 percent of major program commodity sales, and comprised nearly 50 percent of all farms reporting payments.

Regionally, farms in the Corn Belt, the Northern Plains, and the Lakes States received 67.4 percent of the payments, accounted for about 68 percent of major program commodity sales, and comprised nearly 66 percent of all farms reporting payments.

Government payments amounted to 14.3 percent of gross cash income in the Corn Belt, 13.8 percent in the Northern Plains, 11.2 percent in the Lake States, 9.9 percent in the Southern Plains, 9.2 percent in the Mountain States, and 8.7 percent in the Delta.

The highest average payments ($30,176 per reporting farm) went to farms in the Pacific region. Appalachia had the lowest average—$7,898. In the Delta region the figure was $25,747 and in the Mountain region it was $24,384. The Corn Belt, Northern Plains, and Southern Plains all had averages of about $19,400.

Classified by number of acres, the farms with 501 to 1,000 acres accounted for 30 percent of major program commodity sales and 29.7 percent of government payments. The farms of 1,001 to 2,000 acres had 27.3 percent of program commodity sales and 24.7 percent of the government payments.

Farms of more than 500 acres received nearly 72 percent of total payments and accounted for about 75 percent of program commodity sales. This group constituted about 19 percent of all farms and about 40 percent of those receiving a government payment in 1987.

Forty-six percent of farms had returns to equity between minus 5 percent and plus 4 percent. They accounted for 27.6 percent

of major program commodity sales and 29.3 percent of total government payments. Farms with 5 to 9 percent return on equity totaled 16.3 percent of commodity sales and 14.8 percent of government payments.

Those with returns of 10 percent or higher accounted for 32.1 percent of major program commodity sales and 30.9 percent of government payments.

Government Payments are Roughly Proportional to Value of Production[1]

	Payments per reporting farm	Percent of total payments	Percent of major program commodity sales	Payments as percent of gross cash income
All farms	$18,017	100.00	100.00	9.16
Economic class:				
$500,000 or over	$68,705	10.21	14.75	3.46
$250,000 to $499,999	$46,416	21.31	24.23	10.36
$100,000 to $249,999	$26,959	36.30	34.21	12.68
$40,000 to $99,999	$14,350	21.65	18.74	12.22
$10,000 to $39,999	$ 6,305	8.89	6.99	9.10
$9,999 or less	$ 2,415	1.63	1.08	5.59
Production specialty:				
Cash grain	$22,232	60.07	69.26	23.24
Cotton	$38,294	7.76	10.76	19.81
All other crop	$12,799	5.50	5.13	3.45
Beef, hog, sheep	$12,080	17.22	11.35	5.93
Dairy	$12,034	7.18	2.93	3.72
All other livestock	$10,946	1.26	0.57	1.04
Region:				
Northeast	$ 9,378	1.49	1.29	1.78
Lake States	$15,308	13.49	9.34	11.15
Corn Belt	$19,373	34.23	43.47	14.29
Northern Plains	$19,481	19.66	15.31	13.84
Appalachia	$ 7,898	3.62	3.82	4.31
Southeast	$14,191	3.47	3.23	4.57
Delta	$25,747	4.72	7.00	8.74
Southern Plains	$19,339	8.11	5.72	9.90
Mountain	$24,384	7.33	6.52	9.17
Pacific	$30,176	3.89	4.30	3.00
Financial position:				
Favorable	$18,736	62.61	64.82	8.87
Marginal income	$10,946	10.31	9.11	9.99
Marginal solvency	$23,172	20.45	20.28	8.92
Vulnerable	$17,258	6.63	5.79	12.53

[1]Data are from the 1987 Farm Costs and Returns Survey. Payments do not include net CCC loans.

Farms classified as being in a vulnerable financial position in 1987 (with a negative net cash farm income and a debt-to-asset ratio above 0.40) received nearly 7 percent of total government payments and had about 6 percent of major program eligible commodity sales. Those farms comprised 6.8 percent of all farms.

Nearly half of all farms were categorized as being in a favorable financial position—with positive net cash farm income and a debt-to-asset ratio below 0.40. They received 62.6 percent of total government payments. Those in the "marginal solvency" category (with a debt-to-asset ratio of 0.40 or above) accounted for 20.5 percent and those with "marginal income" (negative net cash farm income) made up 10.3 percent.

Conservation Payments Growing

Conservation Reserve Program payments are making up a larger part of direct payments to the farm sector for 1988 and 1989, as deficiency payments decline, Bernat says. The CRP accounted for about 8 percent of total direct payments in 1987. This is likely to increase to nearly 10 percent for 1988, and could rise to about 20 percent in 1989, depending on the rate of signups for the program, ERS economists say.

The CRP was authorized by Congress in the 1985 farm bill. The original goal of the program was to enroll 40-45 million acres of highly erodible land by 1991. As of the end of 1988, about 28 million acres had been enrolled.

Farmers receive rental payments under contracts to leave the land idle for 10 years. They also are reimbursed for part of the cost of establishing protective soil covers of grass or trees. □

[Based primarily on information provided by economists Andy Bernat and Dave Banker of the Agriculture and Rural Economy Division, Economic Research Service.]

REPORTS IN THE NEWS

Erodible Soils Not All the Same

The common assumption that highly erodible soils are less productive than less erodible soils may be incorrect.

This is important for policy and program decisions on U.S. cropland productivity. The author of this report notes that some lands that are both highly erodible and highly productive may require greater incentives for retirement, because of higher earning power.

Soil erosion policy aiming to remove highly erodible land from production to reduce soil erosion may be dealing with some of the most productive and valuable cropland.

The analyst says that the land capability classification system and USDA's prime farmland definition (used to measure the suitability of land for agricultural uses) do not provide enough information for decisions about the comparative productivity of soils that vary in erodibility.

The soil erodibility classification divides cropland into highly erodible, nonerodible, and moderately erodible soils based on the land's inherent physical characteristics. The definition of prime farmland is based on such soil characteristics as capacity to hold moisture, temperature, acidity, frequency of flooding, erodibility, and size of rock fragments.

The author identifies overlaps in the productivity distributions of soils with different erodibility levels. Commonly used classification systems combine soil attributes that should be kept separate, he says.

A more accurate picture of the relationship between soil productivity and erodibility would be provided by measures that separate short-term and long-term limitations on land use, he says.

Productivity and Erodibility of U.S. Cropland *by Ralph Heimlich. Published January 1989; 21 pages; $5.50 ($7 to non-U.S. addresses).*

Asia/Near East Trade Evolving

U.S. agricultural exports to five countries of South Asia increased from $382 million in value in 1970 to $451 million in 1986. Exports to five East Asian countries grew from $466 million to $1.8 billion over the same time period.

Four Middle Eastern countries boosted their purchases of U.S. farm products from $109 million in 1970 to $370 million in 1986. And three countries of North Africa increased their imports from $102 million annually to $1.1 billion in the same period.

Grains and oilseeds accounted for about 90 percent of U.S. farm-product sales to Middle East countries during the 1962-86 period, 80 percent of sales to North Africa, 70 percent of sales to South Asia, and 50 percent of sales to East Asia.

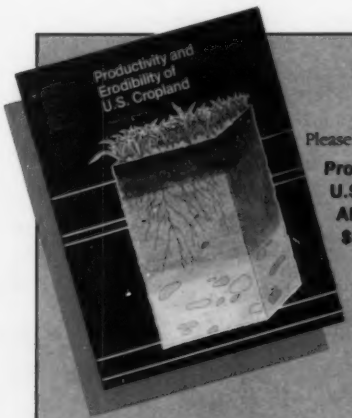
This report provides a condensed statistical picture of the role and importance of agricultural trade between the United States and selected countries and regions in Asia and the Near East.

The success of several Asian countries in generating export revenues makes them ideal commercial markets for U.S. agricultural products. The countries have followed export-oriented growth strategies that have generated rates of income growth far in excess of those experienced by the rest of the developing economies.

Among the largest categories of agricultural imports to the United States from the Asian regions were tea, coffee, fresh fish, canned fish, and natural rubber. Exports from the Middle East to this country have been dominated by the area's increasing role as a producer of fertilizers and pesticides.

Using United Nations trade data, this report "presents the major components of agricultural trade while focusing on the significant elements of the trade."

Agricultural Trade Between Asia/Near East Countries and the United States, 1962-86 *by Daniel Timms and Mathew Shane. Published January 1989; 139 pages of mostly data tables; $8.00 ($10 to non-U.S. addresses).*



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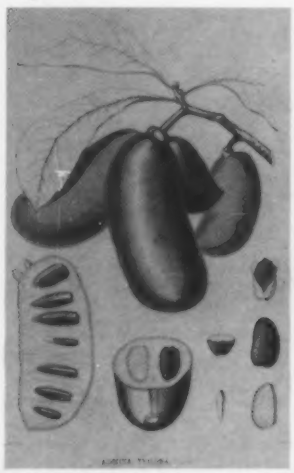
Pawpaws Could Become The Fruit of the Future

Native to North America, the pawpaw tree is virtually unknown —and yet it could become one of the important fruit trees in the United States.

Commonly found throughout the eastern United States, the pawpaw offers a fruit which (at its best) blends a soft custard-like texture with a sweet tropical taste, reminiscent of bananas, mangoes, and pears.

Before commercial cultivation can begin, however, consumers must know what to expect when they bite into a pawpaw. And that is not the case today.

"Not all pawpaws are created equal," says ERS economist Neal Peterson, who is working (on his own time) to develop pawpaw varieties that will permit production and marketing on a wide scale. "Some fruits seem to be mostly seed while others are mostly flesh. Some pawpaws taste very good, and others taste very bad."



An early botanical drawing shows how the pawpaw fruits in clusters and has many seeds.

These 6-year-old pawpaw trees are located at the Wye Research Center on Maryland's Eastern Shore. Fruits are hidden beneath the leaves.

In addition, the trees themselves vary as much as the taste of the fruit in terms of fruit-bearing patterns.

"Some trees never seem to bear while others bear heavily almost every year," says Peterson. "Some trees bear large fruit, and others only small fruit. A few trees bear in mid-August, most in September, and a few in October, even late October, but the exact timing of the season is related to latitude and climate."

Peterson's project is under way in earnest at the Wye Research and Education Center of the University of Maryland, on the state's Eastern Shore, and at the Western Maryland Research and Education Center near Sharpsburg, MD. With some 1,200 trees in cultivation, Peterson and fellow researcher Harry Swartz of the University of Maryland, are seeking to domesticate the pawpaw (*Asimina triloba*).

What spurs Peterson on is the fact that pawpaws are an obvious candidate for domestication and commercial cultivation, being delicious, nutritious, and North America's largest edible native fruit.

Its initial allure is good flavor and fragrance. But the pawpaw is also highly nutritious, providing large amounts of vitamins A and C. Low in moisture, pawpaws are high in unsaturated fats, proteins, carbohydrates, and are a good source of linoleic and linolenic acids, the two essential fatty acids of human diet.

Compared to other popular fruits of the temperate zone (apples, peaches, grapes), pawpaws have much higher amounts of minerals essential to human diet, particularly potassium, phosphorus, magnesium, sulfur, calcium, and iron. It is also better in total amino acid content and has a favorable balance of the essential amino acids. Amino acids are the components from which proteins are built, and are vital for proper digestion and metabolism of foods.

Little was known about the food value of the pawpaw until USDA scientist John P. Cherry analyzed its nutritive value in 1981 at the department's Southern Regional Research Center in New Orleans (the first such nutrient study since 1917). Cherry had been contacted by Peterson, who collected the fruit for Cherry on weekend forays into the Virginia countryside.

Apart from its fruit, the pawpaw tree possesses many fine features that make it desirable for domestication. It is a small tree with attractive foliage and habit, is little bothered by insects and diseases, and is tolerant of shade—all of which suit it to a variety of uses including home gardening, landscaping, intercropping with other tree crops, and commercial orchard production. It's also helpful in controlling erosion.

It is found as far west as Kansas, as far south as Florida, and is fully hardy as far north as southern Michigan. In fact, its wide adaptability should suit it to cultivation in all the temperate humid regions of the globe.

Although Peterson has met with a lot of skepticism about the pawpaw, he says the history of this country is one of adopting native foods that are now common staples.

A large cluster of pawpaws may contain as many as 8 fruits. The largest fruits, up to 6 inches long, are obtained in smaller clusters.

"Other foods native to the Americas have faced difficulties overcoming consumer doubts or indifference, including corn, beans, squash, tomatoes, and potatoes," he says.

In some instances, adoption has been helped along by USDA research and development. That's the case with blueberries. Before 1920, the blueberry was an undomesticated fruit, generally unavailable outside New England. Today, of course, the blueberry has widespread acceptance and is usually available throughout the nation.

Even if research efforts proceed as planned, it'll be awhile before pawpaws share space in supermarket produce sections with apples, oranges, and other fruits. But work being done now is critical if that goal is to be realized.

A significant step is simply the systematic, scientific approach on a large scale being taken by Peterson with his project.

He's taken pawpaws out of the backwoods and backyards, where much of the informal study and development has taken place, and into a university research setting.

"Most previous research was conducted outside of institutional settings, and had suffered from a lack of continuity, coordination, and sufficient resources," says Peterson, who in addition to his economics background holds a master's degree in genetics.

The problems to be overcome in developing a marketable pawpaw are formidable, including many large-sized seeds per fruit, thin skins and easily bruised flesh, and great perishability.

But the pawpaw tree itself appears to hold the answers to these problems. "First," Peterson reports, "in the pawpaw population, the natural variation in these traits is considerable."

Then, too, "some of the other *Asimina* species excel in the opposite qualities—namely, thick skins, small seeds, and good fruitfulness—so it may be possible to correct the deficiencies in *Asimina triloba* through a program of hybridization, backcrossing, and selection." In other words, a good pawpaw fruit can be bred from trees already producing pawpaws that are superior in one or more positive traits.

"Right now in our pawpaw plantings we have different trees that each possess one or a few good traits," says Peterson. "What we need to do is get *all* those good traits into one tree."

That will take a long time, he says, and require raising thousands of trees.

The reason, he explains, is that several generations must be bred in order to recombine these traits into a single variety. Each generation takes about 6 years to reach fruit-bearing maturity. With a minimum of four generations to create a truly superior hybrid, the pawpaw is still about 25 years away from any large-scale commercial production, he says.

Great numbers of trees must be raised from seed because genetic recombination, which happens during sexual reproduction, is governed by chance. One needs a large population in order to increase the odds of finding the rare, exceptionally good tree. Once a superior tree is developed, it can be reproduced by grafting, cuttings, or other asexual reproduction methods.

Related research efforts, he says, will include studying shipping and handling methods that would prolong storage life.

Peterson is optimistic about the pawpaw's eventual place in the American diet.

He offers the following testimony, told in the words of a woman who bought a property with pawpaw trees: "The first year I was here, it was a mess. These big, green fruits started falling out of the trees onto the grass. I didn't know what to think. I thought they were poisonous. New Yorkers just don't pick things up off the ground and put them in their mouths. But they smelled good! So the next year, though I still didn't know what they were, I decided to try one. It was wonderful! I didn't know if anyone else in the world had a tree like this. I didn't know scientists were interested in them. I know I loved them. I have at least one a day (during the season) for breakfast or late afternoon snack."

—Doug Martinez

Researcher Neal Peterson checks the progress of the late-August pawpaw harvest at the Wye Research Center on Maryland's Eastern Shore.

FARMLINE TRENDS

Monthly Price Monitor
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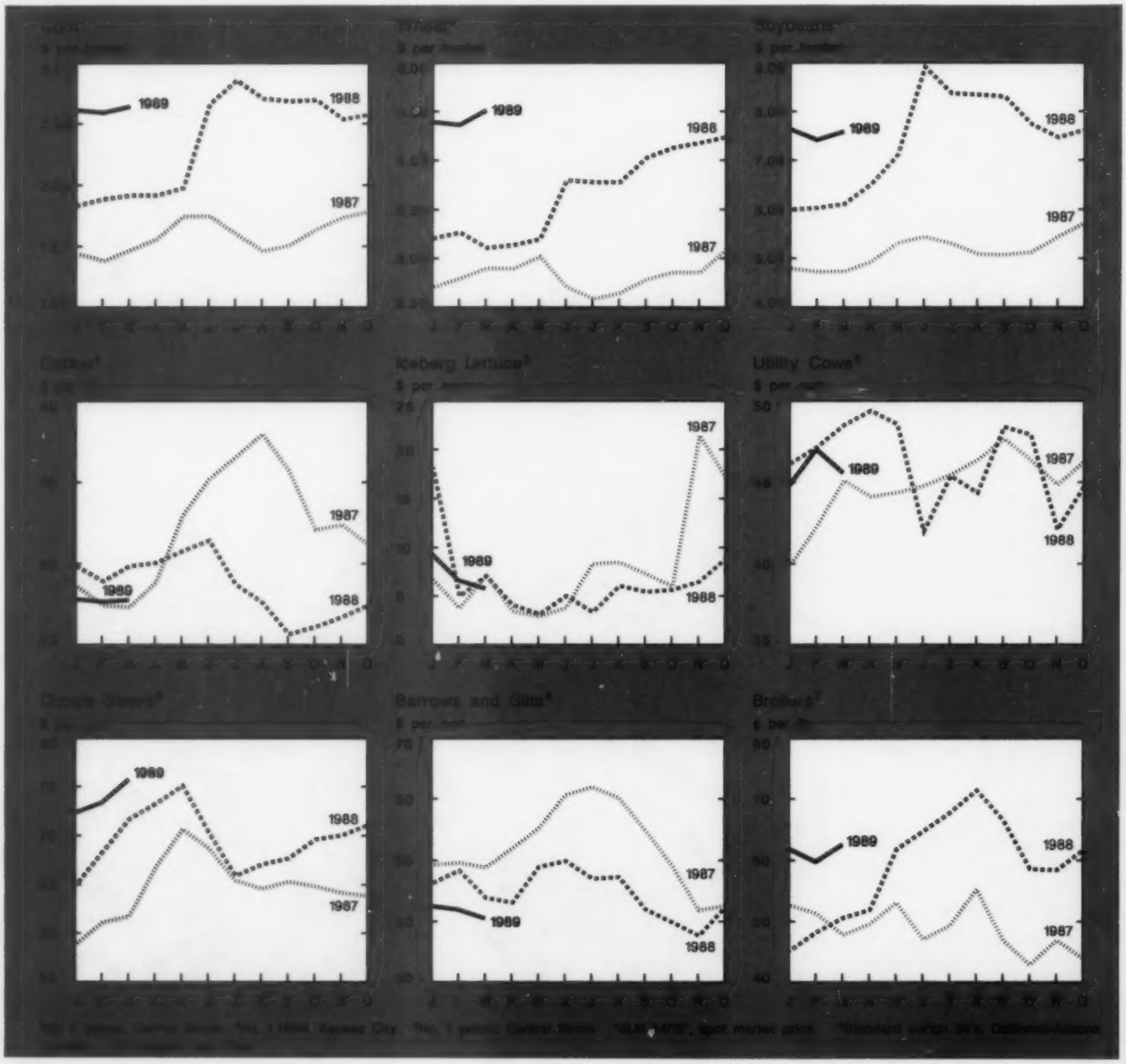

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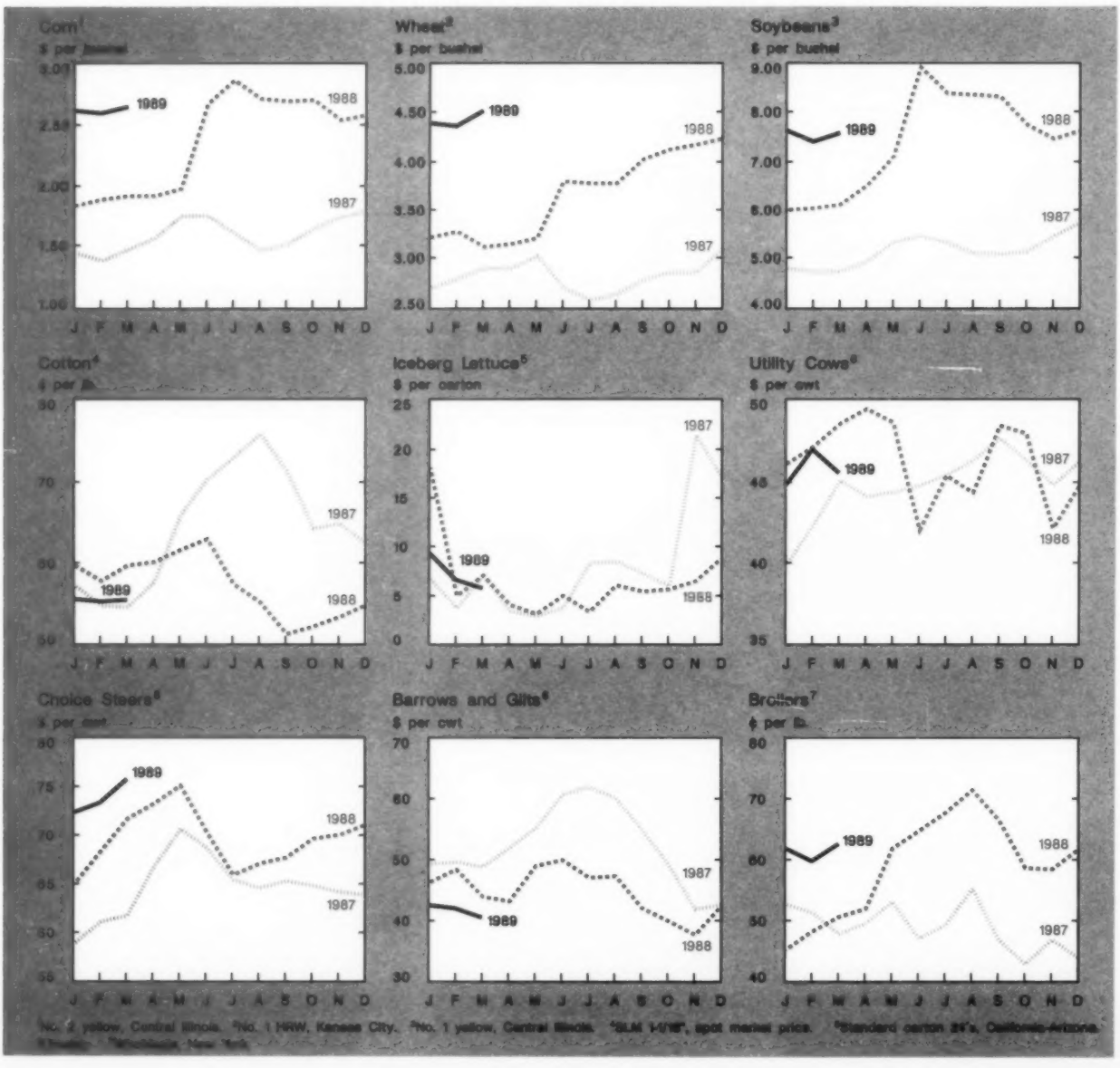

[1]No. 2 yellow, Central Illinois. [2]No. 1 HRW, Kansas City. [3]No. 1 yellow, Central Illinois. [4]SLM 1-1/16", spot market price. [5]Standard carton 24's, California-Arizona. [6]Omaha. [7]Wholesale, New York.

Who's First?

Rankings of the Top Farm States by Selected Characteristics

	1st	2nd	3rd	4th	5th	6th	7th	8th
Number of farms, June 1, 1988 — farms: U.S. total: 2,158,800 farms	Texas 156,000	Missouri 113,000	Iowa 107,000	Kentucky 99,000	Tennessee 94,000	Minnesota[1] 94,000	Ohio 84,000	Illinois 83,000
Land in farms, June 1, 1988 — acres, in thousands: U.S. total: 998,692,000 acres	Texas 132,000	Montana 60,700	Kansas 47,900	Nebraska 47,100	New Mexico 45,000	So. Dakota 44,100	No. Dakota 40,400	Arizona 36,500
Average farm size, June 1, 1988 — avg. acres per farm: U.S. average: 463 acres	Arizona 4,506	Wyoming 4,000	Nevada 3,867	New Mexico 3,333	Montana 2,605	Alaska 2,123	So. Dakota 1,276	No. Dakota 1,243
Total value of farm real estate (land & buildings), Feb. 1, 1988 — millions of dollars: U.S. total: $563,265,000,000[2]	Texas 62,113	California 43,701	Illinois 31,850	Iowa 29,803	Florida 20,750	Kansas 17,637	Missouri 17,503	Nebraska 17,280
Farm real estate values per acre, Feb. 1, 1988 — avg. value, $ per acre: U.S. average: $564 per acre[2]	R. Island 6,240	N. Jersey 6,189	Conn. 4,914	Mass. 3,534	New Hamp. 2,037	Maryland 2,014	Delaware 1,895	Pennsylvania 1,819
Acres planted to principal field crops, 1988 — acres, in thousands: U.S. total: 308,344,000	Iowa 24,692	Illinois 22,949	Minnesota 20,649	North Dakota 19,798	Kansas 19,302	Texas 17,986	Nebraska 17,349	South Dakota 15,191
Number of cattle & calves, Jan. 1, 1989 — thousand head: U.S. total: 99,484,000	Texas 13,700	Kansas 5,900	Nebraska 5,400	Oklahoma 5,200	Iowa 4,750	California 4,700	Missouri 4,500	Wisconsin 4,130
Number of hogs & pigs, Dec. 1, 1988 — thousand head: U.S. total: 55,299,000 head	Iowa 13,900	Illinois 5,600	Minnesota 4,690	Indiana 4,300	Nebraska 4,050	Missouri 2,850	No. Carolina 2,700	Ohio 2,210
Broiler production, 1987 — millions of birds: U.S. total: 5,002,934,000 birds	Arkansas 879	Georgia 733	Alabama 666	No. Carolina 478	Miss. 343	Maryland 264	Texas 259	Delaware 209
Number of sheep & lambs, Jan. 1, 1989 — thousand head: U.S. total: 10,802,100 head	Texas 1,900	California 940	Wyoming 837	Colorado 825	So. Dakota 590	Montana 568	Utah 503	Oregon 475
Cash receipts from crop marketings, 1987 — millions of dollars: U.S. total: $61,876,000,000	California 10,781	Florida 4,125	Illinois 3,913	Iowa[1] 3,510	Minn.[1] 3,510	Texas 3,027	Indiana 2,016	Nebraska 1,975
Cash receipts from marketings of livestock products, 1987 — millions of dollars: U.S. total: $76,218,000,000	Texas 6,059	Iowa 5,270	Nebraska 4,848	California 4,741	Wisconsin 4,222	Kansas 3,914	Minnesota 3,645	Colorado 2,321
Direct government payments to farmers, 1987 — millions of dollars: U.S. total: $16,746,732,000	Iowa 1,988	Illinois 1,477	Texas 1,441	Nebraska 1,275	Minnesota 1,193	Kansas 966	No. Dakota 719	Indiana 670
Net cash income from farming, 1987 — millions of dollars: U.S. total: $57,060,000,000	California 6,183	Iowa 3,941	Texas 3,597	Illinois 2,722	Minnesota 2,703	Nebraska 2,648	Florida 2,639	Wisconsin 2,260

[1]Where state data are equal, rankings are based on the previous year's numbers. [2]Excludes Alaska and Hawaii.

Data are from the Economic Research Service and National Agricultural Statistics Service.

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